

5	Inventors:	Andrea Bimson Jin Chyung Meena Gopakumar Lorraine Miranda Biswajit Sarkar
10		Shashikant Rao Kaustubh Kunte

This application claims the benefit of U.S. Provisional Application No. 0/178,456, filed January 27, 2000, the entire contents of which are incorporated by reference.

The invention relates generally to methods and apparatus for managing content of a company-wide internet website, and more particularly, to systems for organizing data related in a single database so the content can be managed from a global perspective.

As more and more companies begin to provide a presence on the internet, they are confronted with the issues of presentation and conformity within the preparation of the presentations. Various schemes have been presented to assist the companies in preparing the presentation screens that would appear on the internet website, along with placing the presentation of the page in a location or locations that are linked, requiring a user to traverse various web pages to obtain the presentation desired. Such approaches have included delegated authority systems, have used content aggregation, have provided graphical interfaces and dynamically generated web documents. Other general website management has included editing and generating

information, data access/processing systems, automatic publishing systems and group wire systems. These approaches generally require a knowledge of the HTML operating language, a capability generally only found in the website programmers and not among general employees.

5           The prior art generally fails to disclose a process for implementing changes to an internet website, such that employees in a corporation may define and enforce a common style of page layout to provide an application that can be accessed by multiple users at the same time by an internet browser, where the application allows corporate employees to manage  
10   content, create new web pages, process content through workflow, and define new content and style which can then be provided to a user without an undue amount of searching to find the desired information. Accordingly, once the presentation page is completed, data elements relating to the significance of the content are utilized to store information relating to the content in various  
15   locations or sites, with the various sites interconnected through the use of links. Thus, to obtain the information desired, a user may, of necessity, be forced to traverse several links to obtain the desired page with the required information.

## **SUMMARY OF THE INVENTION**

20           The previously described deficiencies in the prior are addressed in the present invention which, in conjunction with a content management application, provides an internet application to provide a system for implementing changes to an internet website and, permitting a company to manage content for its website from a global perspective. The content,  
25   created and stored once, can then be shared and managed across a global organization. The information architecture system is the basic underlying

infrastructure that allows a company to efficiently manage its content while taking advantage of various efficiencies. The data can thus be viewed from a holistic perspective utilizing a structure of website contents that results from the relationship between objects on the physical pages, i.e., appearance only, instead of the prior art reliance on the significance of the data elements displayed on the page, thereby providing a look and feel driven structure. The system function supports a workflow model for the launching of content and is extensible so the database does not need to be expanded in order to collect new data. Further, the system is platform and software independent whereby the content stored in the infrastructure can be delivered on any platform with the system providing granularity of content management. In one exemplary embodiment, the system makes use of the eXtensible Markup Language (XML) and relevant content and data fields are associated close to one another to reduce the amount of data analysis required when searching. The information architecture system includes multiple tables within a single database, so a search only requires the opening of that database to access the multiple tables. Thus, all data is aggregated into one database to avoid having to access many databases which typically may include different formats and different data structures.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

The above and other features and advantages of the present invention are hereinafter described in the following detailed description of exemplary embodiments to be read in conjunction with the accompanying drawing figures, wherein like reference numerals are used to identify the same or similar parts or steps in the similar views, and:

**Figure 1** is a pictorial representation of the workflow and page storage aspect of the present invention;

**Figure 2** is a block diagram depicting an embodiment of the Network Architecture System using Content Management of the present invention;

5 **Figure 3** is a block diagram depicting a user accessing the global database of the Network Architecture System;

**Figure 4a-4c** are typical examples of screen presentations accessible by a user of the Network Architecture System; and

**Figure 5** is a workflow diagram depicting a logical data model of the network  
10 information architecture.

#### **DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS**

The present invention may be described herein in terms of functional block components and various processing steps. It should be appreciated that such functional blocks may be realized by any number of hardware  
15 and/or software components configured to perform the specified functions. For example, the present invention may employ various integrated circuit (IC) components, e.g., memory elements, processing elements, logic elements, look-up tables, and the like, which may carry out a variety of functions under the control of one or more microprocessors or other control devices.  
20 Similarly, the software elements of the present invention may be implemented with any programming or scripting language such as C, C++, Java, COBOL, assembler, PERL, or the like, with the various algorithms being implemented with any combination of data structures, objects, processes, routines or other programming elements. Further, it should be noted that the present invention  
25 may employ any number of conventional techniques for data transmission, signaling, data processing, network control, and the like. Still further, the

invention could be used to detect or prevent security issues with a scripting language, such as JavaScript, VBScript or the like.

It should be appreciated that the particular implementations shown and described herein are illustrative of the invention and its best mode and are not intended to otherwise limit the scope of the present invention in any way. Indeed, for the sake of brevity, conventional data networking, application development and other functional aspects of the systems (and components of the individual operating components of the systems) may not be described in detail herein. Furthermore, the connecting lines shown in the various figures contained herein are intended to represent exemplary functional relationships and/or physical couplings between the various elements. It should be noted that many alternative or additional functional relationships or physical connections may be present in a practical electronic transaction system.

Referring now to **Figure 1**, there is shown at 100 a pictorial representation of the flow diagram of the information architecture system of the present invention. The site administrator 102, initiates a project to develop a new web page by assigning an author 106 to create the page using a content management application system 108. This starts the workflow 104 whereby the author creates the page and submits it for approval through various levels. Once the approvals are obtained, the site administrator 102 approves a content launch 110 to a database 120. While various scripting languages may be used in creating content and/or a page, by way of example only and not by way of limitation, the content/page is written in the eXtensible Markup Language (XML) and is stored in database 120 as an XML file.

An external web user 130 wishing to access the information contained in the page would request the page through a CDA translator 140. The CDA

translator 140 would query the database 120, retrieve the page and translate the XML file into an HTML page for presentation to the user 130.

Referring now to **Figure 2**, an exemplary embodiment of the present invention is shown at 200. This embodiment uses a workflow group, such as shown in **Figure 1**, under control of the local site administrator 202. The workflow group includes a content author 206 and content approvers 208. Once the site administrator 202 initiates a project and verbally communicates the user ID and password to each new user designated in the workflow, designated content author 206 creates and edits items using content management applications.

Designated content approvers 208 review the content items produced by content author 206 and pass them through an approval process. Content approvers 208 mark the items as approved or rejected and, when the new content has been approved by all concerned users in the workflow, local site administrator 202 launches the content to the global database 220. Users, using web browsers 230a, 230b, 230c, interface through the worldwide web 232 requesting data. In some instances, the request must be processed through a firewall 234 providing security to the global database 220. Again, the XML file from the global database containing the requested information is processed through a CDA translator into HTML, passed through the firewall 234 and presented as HTML format on the worldwide web 232 for access by the web user requesting the information.

Referring now to **Figure 3**, there is shown a block diagram at 300 of a user accessing the global database of the network architecture system of the present invention. A user 330 connects to the internet or worldwide web 332, logging on through a firewall 334, if such is present, to a CDA translator to

request information from database 320. The database, comprising various XML files relating to the various pages stored therein in XML, as Segment 1, 350, Segment 2, 352 through Segment X, 354. Once the proper segment containing the requested page is located, it is transmitted from the database 5 320 to the CDA translator, which translates the XML file to an HTML page for presentation through the firewall 334 to the internet 332 for presentation to user 330.

Referring also to **Figures 4a-4c**, typical examples of screen presentations accessible by user of the network architecture system are 10 shown. The presentations 4a, 4b, 4c correspond to the various segments 350, 352, 354 depicted in **Figure 3** comprising the information relating to the content contained within the page.

Referring now to **Figure 5**, each information segment shown in **Figure 3** may be seen to include a top level index to the information contained within 15 the page/segment at 502. The page index defines the location of page level information at 504. Page level information 504 defines segment component mapping at 506. Information contained within page component mapping 506 relates to component content information 508. Component content information 508 contains information relating to the various parts of a page, 20 such as the navigation components, the cross-cell components, copyright components, and the like. Additionally, the component content information 508 includes page key word relationships, along with the component type information 510. Component type information 510 further defines the component item information used in generating various items within a page. 25 Base element information 514 provides information used in developing the component item information 512.

Accordingly, corresponding structures, acts, and equivalents of all elements in the claims below are intended to include any structural material or acts for performing the functions in combination with other elements as specifically claimed. The scope of the invention should be determined by the  
5 allowed claims and their legal equivalents, rather than by the examples given above.

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